DOCUMENT RESUME

ED 066 551 UD 012 921

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TITLE	A Report on the Title I, ESEA, Reading Activity in the Darlington Area School During 1971-72.
INSTITUTION	Darlington County Schools, S.C. Area 1.
PUB DATE	Jun 72
NOTE	26p.
AVAILABLE FROM	G. L. Greer, Coordinator, Title I ESEA, Darlington Area Schools, P. O. Box 494, Darlington, S. C. (Price not known)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Autoinstructional Aids; Compensatory Education Programs; Disadvantaged Youth; Educational Diagnosis; *Educational Technology; Elementary School Students; *Individualized Reading; Inservice Teacher Education; *Program Evaluation; *Reading Programs; Secondary School Students; Teaching Methods
IDENTIFIERS	*Elementary Secondary Education Act Title I; ESEA Title I; South Carolina

ABSTRACT

The objectives of this reading program, funded under Title I, Elementary Secondary Education Act, were as follows: (1) students (grades two through seven) shall show an average gain of one month's growth in total reading for each month of participation in the program; (2) third grade students shall score an average 80 percent efficiency on recognition of basic sight words; (3) and, fifth grade students will read a selected paragraph, silently and orally, and answer four or five comprehension questions. The range 51 to 90 percent efficiency was considered the instructional level for all students. The program requires the active involvement of the classroom teacher in both the Reading Skills Centers (one per school) and in the normal classroom setting. Provision is made for intensive pre-training and continuous in-service training of the entire faculties of the two elementary schools and the language arts teachers of the middle school participating in the program. The program was developed and administered in collaboration with a private consulting company specializing in innovative educational technologies. The intensive involvement of administrators, students and parents was also required. Each Center was initially staffed with a full time director and one teacher aide. The classroom teacher accompanies his students to the Center. (JM)

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"The orientation, indoctrination and development of the personnel who have been selected to conduct the Title I program is probably the most critical phase of the Title I program. The concentration of the Title I program on children who have not been developing satisfactorily under the regular school program indicates the need for new approaches to the development of teaching and other personnel."[1]

[1] Title I, ESEA, Program Guides 44 and 45 A
United States Office of Education

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A Report on the Title I, ESEA, Reading Activity in the Darlington Area Schools during 1971-72.

DARLINGTON AREA SCHOOLS, DARLINGTON, SOUTH CAROLINA

June, 1972

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Mrs. Marty Dummett
Consultant

READING SKILLS CENTERS

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APPRECIATIONS. For whatever success we have enjoyed, a tribute of thanks and appreciation is due a number of special people. Without their support and commitment the project would not have been successful. Deep appreciation is extended to Leonard D. Reynolds, Darlington Area Superintendent, who came to us as the new Superintendent during the summer of 1971 and with all the difficulties of taking over a new superintendency, still gave his unqualified support and time to the project; to R. Lane Trantham, Director of Instruction, who recognized the need for a different approach to solving the problems of learning to read, and rendered valuable assistance and direction to project personnel; to Mrs. Betty Beasley, a talented young lady who accepted the role of Director of Reading Services at a late date and coordinated the work of the three Reading Skills Centers with great efficiency; to Mrs. Ila Lane, Mrs. Ruperla Davis and Mrs. Ann King, the directors of the three Reading Skills Centers, who overcame fears and frustrations to become the most creative teachers in the District; to all the associate teachers and aides (planning teachers) in the Centers, whose untiring efforts contributed so greatly; to the principals and faculties of Brockington Elementary, Pine Middle School and St. David's Academy, whose cooperation and willingness to try something new was essential; to Dr. Eldon E. Ekwall, Director of the Reading Center, University of Texas at El Paso, who rendered valuable consulting assistance and directed the research for the project; to all the students participating in the program, who were a pleasure and delight as they performed, as we knew they could when given the proper opportunity; and lastly to Mrs. Marty Dummett, Consultant, a very gracious lady whose know-how, understanding, energy, devotion and total commitment to the Darlington project was the keystone to its success. G. L. GREER

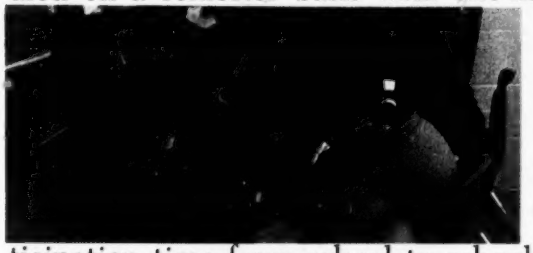
INTRODUCTION. In the fall of 1970, it was my honor and pleasure as President of the South Carolina Association of ESEA Administrators to preside at the annual fall conference. During the course of this three day conference, several interesting presentations were made concerning programs for disadvantaged children. The presentation by Mrs. Mary Dummett, Staff Reading Consultant, Psychotechnics, Inc., Glenview, Illinois, particularly impressed me. Using techniques and methods that were both fun and informative, she motivated this group of administrators and directed us in a unique learning experience for approximately one hour. In further conversation with her concerning the emphasis on teacher training and success oriented programming, I became convinced that she and the company she represented offered our district the best chance of beginning to solve the serious and frustrating problem of reading deficiency. On returning to the district, I began a series of discussions with Mr. Lane Trantham, our Director of Instruction. He voiced his concern that we needed a reading program that could "put it all together" in a concentrated effort to get disadvantaged readers on the road to success. We had previously tried many approaches; some of this, a little of that and sometimes a lot more of this and that; however, the rate of progress was not satisfying and to continue our present pattern was not a pleasant prospect. We agreed to contact Mrs. Dummett for further consultation and to perform a "needs assessment" in certain high priority schools. This was done and from this point we developed and implemented this new reading program in three Title I project schools of the Darlington Area Schools. G. L. GREER

PLAN AND DESIGN. We had planned initially to place the new program in only one school on a pilot basis. After further consideration, we felt the need for a greater cross section of students at different schools and levels and finally decided on three schools, all of which showed a high percentage of reading deprivation. Having placed our confidence in the abilities of Mrs. Dummett and Psychotechnics, Inc., we asked Mrs. Dummett to submit a proposal covering the three schools. We asked that the proposal be written the way she would want it if she had the responsibility of teaching within it day after day. Before the proposal was submitted, we visited the schools and discussed the concept with principals and other key personnel. We visualized many problems that we would encounter. Some were real and some were imagined, but none seemed insurmountable. The proposal was received, studied and considered. It called for the establishment of separate Reading Skills Centers at each of the three schools, staffed full time with a Center Director and aides, where the classroom teacher would bring a group for one half of the regular language arts period. The classroom teacher would remain with the class and teach in the Skills Center along with the Center staff. Scheduling into the Centers was to be done in such a way as to provide time during the regular language arts block and not disrupt the schedule of other subject areas. Specific groups of disadvantaged readers were designated by grade levels to be served on a priority basis in each of the three schools.

The proposed program would require the active involvement of the classroom teacher in both the Reading Skills Centers and in the normal classroom setting. The proposal also contained provisions for intensive pre-training and continuous in-service training of the entire faculties of the two elementary schools and the language arts teachers of the middle school. The Reading Skills Center directors were to receive additional training and in-service beyond the above. At our insistance, the proposal contained a recommendation for a specified budgeted amount for additional consultative services of Mrs. Dummett and other consultants that were to be determined as needed. Objectives and methods for achieving specified goals were stated clearly. Materials, equipment, recommended testing and evaluation alternatives and schedules for training and consultation were outlined. Consideration was also given to some form of research on the project but specific recommendations were not made at this time. The program would require the intense involvement of administrators, teachers, students and parents. After analysis by district personnel and review with the Title I, ESEA Office of the State Department of Education (through pre-submission procedures) the proposal, with minor modification, was accepted.

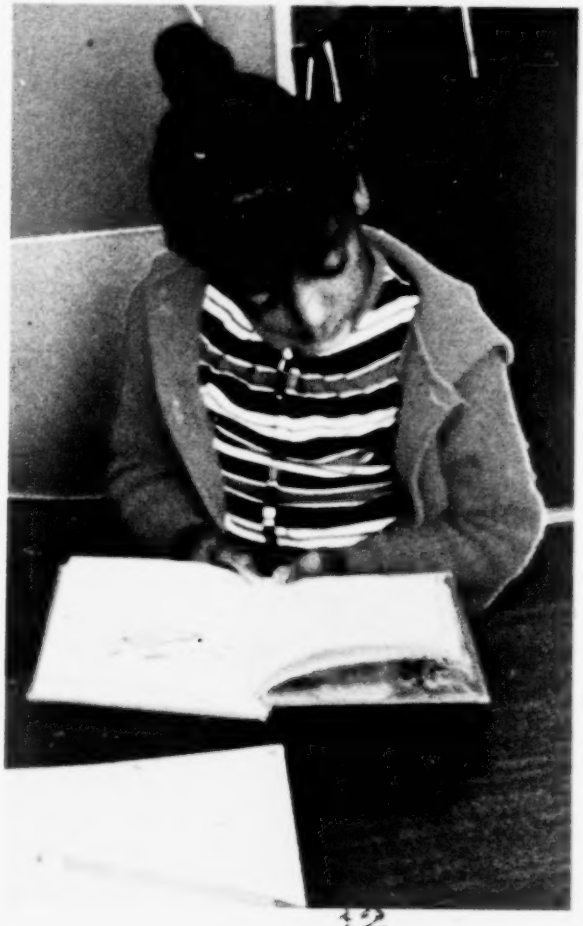
TRAINING AND IN-SERVICE EDUCATION. As referred to in the Plan and Design section, a training and in-service education program was incorporated into the project. Our first step was a brief afternoon meeting with faculty members from the three schools in April, 1971. Mrs. Marty Dummett, Consultant, outlined briefly how the Reading Skills Centers would operate in relation to the school program and generally how students, teachers, and Reading Skills Center personnel would interact. During the latter part of June, 1971, the Director of Instruction and Title I Coordinator of the Darlington Area Schools, and Mr. Danny Brabham, Director, Title I, ESEA, State Department of Education, at the request of the school district, visited the Psychotechnics facility in Glenview, Illinois, to review the entire program with their personnel. This meeting proved to be very helpful, enabling all parties to reach a clearer understanding concerning the project. During the last week of July, 1971, the Director of Reading Services and Reading Skills Centers directors were engaged in a one week training session in Glenview, Illinois, sponsored by Psychotechnics, Inc. This week of training was designed to familiarize our key personnel with various instruments, program materials, teaching methods and techniques. These personnel were used as resource people in the training session held later with full faculties. In early August, 1971, the classroom teachers and Reading Skills Centers personnel from the three schools were engaged in a week's training program in the District, under the direction of the consultant. This was the first in-depth training for the classroom teachers and proved to be one of the most meaningful phases of the project. The teachers responded magnificently and by the end of the week were doing and saying things that some of them had previously thought impossible. At this point, the importance of this training for the classroom teacher cannot be over-emphasized. It is essential to the success of a program such as this that teacher attitudes be changed and that teachers be willing to adopt new methods and techniques to help children to learn. Fortunately, our people were responsive and carried forward with the intent of the program. Just prior to the opening of school in late August, the consultant returned for two additional days to work with the Center directors and aides concerning last minute problems and questions. By this time we had finalized our procedures on testing and evaluations and had contracted with Dr. Eldon E. Ekwall of the University of Texas at El Paso to conduct the research. The consultant and researcher reviewed with Center personnel the plan for testing and information gathering. During the last two weeks of September, 1971, when Centers were becoming operational, the consultant was in the district full time, working with Center personnel in the three schools concerning orientation of students and training of students in the use of instrumentation. This period was crucial for our people and the guiding hand of the consultant was absolutely essential. For the remainder of the school year, we had originally planned to have the consultant return to the district for two days each month. With the cooperation of Psychotechnics, Inc., the consultant time was expanded and made more flexible to meet the needs of our program, and was of inestimable value. During the course of the year we felt the need for periodic full day in-service sessions with the Reading Skills Centers personnel. These sessions were not prescheduled but were set up as needed. The Centers were closed for four separate days and personnel assembled for all-day sessions with the consultant. These sessions were extremely valuable. They afforded personnel the opportunity to clear up many questions on problems that had arisen and also the opportunity to review new materials before being introduced in the Centers' program. *The pre-training and continuous in-service training is the very heart of this program. No matter how well designed the project, how good the materials, how capable the persons involved, the need for continuing guidance and consultation is crucial to the program.*

PROGRAM OPERATION. Reading Skills Centers were established at three project schools. Although designed to be very much alike, each of the Centers is uniquely different. Factors such as size of school, space available and personalities contributed to this unique difference. The physical appearance of the three Centers is very similar, though varying in size. After the spaces to be used as Centers were designated, renovations were necessary to meet the needs of the design. Carpeting and additional electrical outlets were provided in all Centers. In one case a wall was removed, in another an old building previously not considered usable any longer was renovated from top to bottom and the result was most pleasing. This particular Center is probably more ideally suited for the purpose than the other two. All, however, served the purpose very well. Student participation time in the Centers varied at each school, this being determined by the number of disadvantaged readers to be served. At St. David's, due to a very small enrollment, we were able to serve all disadvantaged readers in grades 1 thru 7 and a special education class, one period daily, five days a week. At Brockington Elementary we served all disadvantaged readers in grades 2 thru 5 on an every-other-day basis, each student averaging 2½ periods per week in the Center. At Pine Middle School, which houses grades 6 thru 8 with an enrollment of approximately 575, we served only grade 6 plus three special education classes (2-EMH and 1-TMH). These students were scheduled on a semester basis with one-half the students being served three periods per week, the other half two periods per week. In the second semester, these students' schedules were reversed, the net result being an average of 2½ periods per week over the full school year. Ideally, we would have preferred to serve each child one period per day, each day of the year. However, this variation in student participation time from school to school this first year has afforded us the opportunity to study the relationship between participation time and student growth and should provide valuable information in future programming.



Each Center was initially staffed with a full time director and one teacher aide. With the classroom teacher accompanying his students, we had a minimum of three adults with each grouping, or a student-adult ratio of approximately 10 to 1. We were able to add an additional aide at two of the Centers in the late fall, and due to teacher transfers within the district were able to add another full time teacher to each Center without incurring additional cost. This reduced the student-adult ratio to an average of approximately 6 to 1, enabling us to further individualize and group for instruction. The students' time in the Center is highly individualized. Although grouped into a particular activity area with other children, the student works independently with materials at his level and at his own pace. A few activities, such as work with the "Tachomatic" on basic sight words and visual tracking were conducted by groups, with all children doing the same thing; however, the students are further reinforced through individual study using the same content in a different form. The soundness of a program such as this is attributable to the fact that each student's participation is on a *diagnostic-prescriptive* basis and once his level of participation has been determined he is afforded *many different media and methods* for achieving his goal. If a child is deficient in knowledge of basic sight words, he can attack this deficiency thru work with tracking and tachistoscopic films, listen and respond system (Rx program), audio tapes, seat work, etc., all of which are designed

to teach basic sight words. The same applies to the other critical phases of learning to read. There is very little chance for a child to become bored. There are just too many interesting, success oriented opportunities available to him. If the child runs into difficulty, there is always someone close by to assist. The response of the students to the Reading Skills Centers was fantastic. It quickly became the most popular spot in school. The concern of some that the many and varied pieces of instrumentation would be difficult for the students to master was soon disspelled. They quickly took command with minimal instruction. From the outset they showed a deep respect for the facility provided them and during the entire year there was not a single case of abuse reported. They seemed to sense the value of the Center to themselves personally. If there was a problem, it was in getting them out of the Centers. Some of the special education students have been known to wander away from their regular classrooms to spend the day in the Center. The Reading Skills Centers staff has many different operations to perform. In addition to their teaching responsibility on a regularly scheduled basis, there are many other facets which require continuing attention to assure smooth operation. Constant checking and updating of student folders, having materials of the day readily available for students, refiling and storage of materials after use, writing individual student prescriptions and checking instrumentation regularly are just some of the tasks to be performed. This burden is eased somewhat by the training of students in individual responsibility, particularly related to materials, record keeping and use and care of instrumentation. Surety for smooth program operation lies in the competency of the Center director and staff, the cooperation of the school principal, classroom teacher and the students. Attitudes of all participants make the difference.



OBJECTIVE-PERFORMANCE CRITERIA. As per the objective-performance criteria promoted under the Title I, ESEA regulations, three major objectives for the reading activity were established. The stated objectives, method of determination and instruments used for determination were as follows: *Objective #1* Students (grades 2-7) shall show an average gain of one month's growth in *total reading* for each month of participation in the program. *Method* — Average *total reading growth* will be computed and reported based on difference in grade equivalent levels between pre and post periods. *Instruments* — Grades two and three were administered the Gates-MacGinitie Reading Test. Grades four thru seven were administered the Iowa Test of Basic Skills, reading section. These tests were administered near the end of the first month of school, prior to active involvement in the Reading Skills Centers program, and again on or around May 1, 1972. The measurable period was seven months. Different forms were used with both pre and post tests with approximately one-half of the total group receiving one form and the other half another form. These forms were reversed during the post testing. In negotiating for research services on the program with Dr. Ekwall, he proposed and we accepted an expanded form of reporting which was felt to be a more accurate indicator of the students' actual progress. A "Ratio of Learning" formula, explained in greater detail in the Research section, was applied to the students' achievement prior to participation in the program and again to the participation period. This enabled us to see immediately whether the student had learned at the same rate, progressed or regressed, and gave us a direct measurement of the effectiveness of the new program versus our previous efforts. *Objective #2* Third grade students shall score an average 80% efficiency on recognition of basic sight words. *Method* — Difference between pre and post percentage efficiencies will be computed. Average efficiency level of all participants will be computed to determine if 80% level has been achieved. *Instruments* — The Corrective Reading System Basic Sight Word Test was used for determining performance on this objective. This list of 267 words includes all of the Dolch list, the 200 words of highest

utility from the Fry list and additional words common to eight sets of basal readers. Although we were concerned primarily with third grade students for reporting purposes, all students were tested and are reported in the research data. Each student was individually tested by the use of the "Tachomatic", an automatically timed device which flashes the words on the screen at a pre-set rate. This method was used to insure exact time lapse of word exposure, exact time lapse between words and uniformity of test administration to all students. This test was administered pre and post, near the end of the first month of school and one month prior to school year end. *Objective #3* Fifth grade students will read a selected paragraph, silently and orally, and answer four or five comprehension questions. *Method* — Average efficiency levels on comprehension will be computed on all 5th grade students to determine objective-performance level success. *Instruments* — We deviated somewhat in methods to determine performance level on this objective. After consultation and consideration it was felt that in considering performance of severely disadvantaged readers, a range of 51% — 90% efficiency was more realistic and indicative of true progress. Two separate reading passages were used. They were the 5A and 5B passages from Spache's *Diagnostic Reading Scales*. Each passage contained eight questions which Spache maintains are written so as to test not only recall of important details but also the higher level reading skills. The range of 51% to 90% was considered instructional level for all students. Anything below 51% was considered frustration reading level and anything above 90% was considered free reading level. Each student was given an oral reading passage and a silent reading passage. (Passage 5A was given to one-half of the students orally and to the other half silently. The group that read 5A silently read 5B orally, and the group that read 5A orally, read 5B silently.) Frustration, Instructional and Free reading levels were computed on the oral passages on the basis of oral errors and comprehension combined and were computed on the silent passages on the basis of comprehension only. The percentage of students at or above instructional level in oral reading and at or above instructional level in silent reading was then computed.

RESEARCH ON THE EFFECTIVENESS OF THE DARLINGTON PROJECT. The reader of this report who is familiar with the concepts and terms used in the study may simply wish to read the summary of the effectiveness of the program as shown from data collected, which appears in Part VI. However, the reader who is interested in a complete description of the schools, grades involved, testing procedures, etc. will probably want to read everything in this section. It is arranged in the following order:

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The effectiveness of the Darlington Project was evaluated in two principal ways. One was a measure of student's ratio-of-learning before the beginning of the program and during the program. The second was a measure of students' gain or loss of knowledge of basic sight words during the program. An informal reading inventory passage was also administered to forty-eight students at fifth grade level, at the end of the school year, to determine what percent of the students were reading at their instructional level or above. This was not, however, considered as a measure of the effectiveness of the program.

1. Schools and Grades Involved

Three schools at various grade levels were involved in the research. They were as follows:

Brockington Elementary School	Grades 2 thru 5
St. David's Academy	Grades 1 thru 7
Pine Middle School	Grade 6

Forty-eight fifth grade students from St. David's Academy and Brockington Elementary School were given an informal reading passage to determine what percent of these students could read material written at their grade level, at their instructional reading level. All other testing involved the use of achievement tests to determine students' ratio-of-learning and basic sight word tests to compare knowledge of basic sight words among various grade levels before, during and after the completion of the 1971-72 academic year.

II. Test Forms and Times When Tests Were Given to Various Grade Levels at the Three Schools

1. C.R.S. Basic Sight Word Tests—Pre-test on or near 10/1/71 and post-test on or near 5/1/71. (One form given as both a pre- and post-test.)

	Grades							
Brockington Elementary School		2	3	4	5			
St. David's Academy	1[1]	2	3	4	5	6	7	Sp. Ed.[2]
Pine Middle School						6[3]		

[1] Since most students entering grade 1 cannot read, only the post-test was given to these students.

[2] Children in special education at St. David's Academy also participated in the program.

[3] Since strict testing procedures were not followed for the pre-testing of basic sight words at Pine Middle School, the results are not reported.

2. Gates-MacGinitie Reading Tests for Vocabulary and Comprehension—Pre-test on or near 10/1/71 and post-test on or near 5/1/72

	Pre-test Grade	Form	No. of Students	Post-test Grade	Form	No. of Students
Brockington Elementary School	2	B-2	37	2	B-1	36
	2	B-1	38	2	B-2	38
	3	C-2	41	3	C-1	36
	3	C-1	41	3	C-2	45
St. David's Academy	2	B-2	11	2	B-1	11
	2	B-1	10	2	B-2	10
	3	C-2	7	3	C-1	6
	3	C-1	11	3	C-2	12

3. Iowa Tests for Basic Skills for Vocabulary and Comprehension—Pre-test on or near 10/1/71 and post-test on or near 5/1/72.

	Pre-test Grade	Form	No. of Students	Post-test Grade	Form	No. of Students
Brockington Elementary School	4	3	35	4	4	37
	4	4	34	4	3	32
	5	3	43	5	4	37
	5	4	44	5	3	40
St. David's Academy	4	3	10	4	4	10
	4	4	11	4	3	9
	5	3	7	5	4	7
	5	4	7	5	3	6
	6	3	3	6	4	3
	6	4	3	6	3	3
	7	3	3	7	4	3
	7	4	4	7	3	4
Pine Middle School	6	3	57	6	4	56
	6	4	116	6	3	109

4. Informal Reading Inventory Passages—Administered on or near May 4-8, 1972.

Two different passages of approximately 200 words each, were administered to all thirteen fifth grade students present for testing at St. David's Academy and to thirty-five, fifth grade students at Brockington Elementary School. The two reading passages were alternated from silent to oral among the forty-eight students as follows:

48 Students	Passage #1	Passage #2
	Oral 12	Oral 12
	Silent 12	Silent 12

III. Description of Testing Procedures

Prior to actually beginning work and testing in the skill center, teachers were given instructions on testing procedures to be used with the C.R.S. Basic Sight Word Test, the Gates-MacGinitie Reading Test and the Iowa Test of Basic Skills. Following is a description of each test and the general testing procedures used with that test:

C.R.S. Basic Sight Word Test

The C.R.S. Basic Sight Word Test is a test for basic sight words of high utility. It contains 267 words, which includes all of the Dolch Basic Sight Words, the first two hundred words of high utility from the Fry List, and other words common to a number of different basal reading series. The test words are on film and also printed on paper for the teacher to use in recording right and wrong responses. The film was inserted in the Tachomatic 500[4] and at a setting of 57½ (on the Tachomatic scale).

[4] A tachistoscopic device designed by Psychotechnics, Inc.

This presented the child with a one and one-half second exposure to each word. Each child was tested individually. As he sat near a screen, the teacher explained that when the Tachomatic 500 was started a word would appear on the screen for a short period of time in which the child was to say that word. The teacher then recorded each child's response. These sheets were later checked and the number of correct responses were recorded for each child. The use of a tachistoscopic device of this nature has the following advantages:

(a) The exposure time of each word is controlled, thus some teachers cannot give their students more time than should be allowed for instant recognition, which is the way basic sight words should be recognized.
(b) Teachers cannot "hint" and thus help students. This again, makes testing scientifically controlled.
(c) Students cannot hesitate and thus use up long periods of valuable teacher time in testing. The testing time for any student is about seven minutes.

The Gates-MacGinitie Reading Tests and the Iowa Tests of Basic Skills

The Gates-MacGinitie Reading Tests and the Iowa Tests of Basic Skills are both, of course, standardized tests and were administered according to the directions listed in the Teacher's Manual for each test.

The Informal Reading Inventory Passages

Two different passages were used and every student was tested individually. Each student was told that he would be asked to read two reading passages—one to be read orally and one to be read silently. While reading the oral passage, the student's oral errors were coded so that the total number of errors could be computed later. These passages were also tape recorded and played again to insure accuracy in coding. After reading each passage (oral and silent), each student was asked a series of eight comprehension questions over the content of each passage. The answers to these questions were scored while the student was being tested and they were also tape recorded and checked a second time to insure accuracy and consistency in scoring.

These reading passages were scored according to the most commonly recognized criteria[5] for determining students' "Free", "Instructional", or "Frustration" reading levels.

IX. Explanation of the Concept of Ratio-of-Learning

Several commonly used methods of measuring pupil progress in special programs leave something to be desired. For example, teachers sometimes look at the pre-test, post-test results of individual students on group achievement tests. Because of the rather large standard error (range in which a score may vary by chance) of individual scores on group achievement tests, any true gain a pupil may have made during a school year may be very difficult to interpret. Another method that has been used in researching the effectiveness of special or compensatory programs is to use a control group. This method, while offering a number of advantages, also has some disadvantages. One disadvantage is that there must be a control group at all. In a small school one may not wish to deprive the control group of the benefit of a promising new program simply for the sake of measuring any possible significant differences in post-test results between the two groups. Or, on the other hand, if students in another school are used as a control group there is no assurance that students in the two schools are of equal ability, therefore, a comparison of the two would yield inaccurate results.

The purpose of this part of the report is to explain a method of assessing gains which is valid, as well as relatively easy to interpret. This method deals with children's ratio-of-learning. Although the use of the concept of ratio-of-learning is not new, it is still unfamiliar to many people.

[5] Johnson, Marjorie and Kress, Roy. INFORMAL READING INVENTORIES, Newark, Delaware: International Reading Association, 1965.

The ratio-of-learning is a measurement of children's learning rate prior to entering a special program vs. their learning rate while they are in the program. Because of the unreliability of group test scores for individual students, one should determine the ratio-of-learning for all students in a special program, rather than for individual students. The steps in using this method are as follows:

1. Determine the average number of years that all children in the special program have been in school at the beginning of the program. Remember that second graders have only been in school for one year as of the beginning of grade 2, etc. Therefore, the number of years in school for most children equals their grade level minus one, unless they have failed a year. In that case the number of years in school would equal the grade level they should have been in, minus one.

   Example:

Cindy	– Grade 3 (never failed)	3 – 1 = 2
Blanca	– Grade 5 (never failed)	5 – 1 = 4
Iris	– Grade 4 (failed one year)	5 – 1 = 4
Jo Ann	– Grade 3 (failed two years)	5 – 1 = 4
Dwight	– Grade 2 (never failed)	2 – 1 = 1

   Total number of years in school 15

   $\frac{15}{5} = 3$ yrs./student

   Number of students 5

   Therefore, this group has been in school for an average of 3 yrs./student.

2. Determine the average number of years of achievement of the group when they enter the program. Remember that achievement of 1.0 actually means no achievement at all, therefore, the number of years of achievement for each student is equal to his grade level score on an achievement test, minus one.

   Example:

Cindy	– Pre-test achievement test score	1.5 – 1 = .5
Blanca	– Pre-test achievement test score	3.5 – 1 = 2.5
Iris	– Pre-test achievement test score	2.5 – 1 = 1.5
Jo Ann	– Pre-test achievement test score	2.5 – 1 = 1.5
Dwight	– Pre-test achievement test score	1.0 – 1 = 0.0

   Total years on achievement test 11.0

   Total years of achievement 6.0

   $\frac{6.0}{5.0} = 1.2$

   Number of students 5.0

   Therefore, the average number of years of achievement for this group when they entered the program was 1.2 years.

3. Divide the average number of years of achievement by the average number of years that children have been in school. This will give you their ratio-of-learning prior to entering the special program.

   Example:

   Average number of years of achievement 1.2

   $\frac{1.2}{3.0} = .40$

   Average number of years in school 3.0

   The ratio-of-learning for these children before entering the program was .40, or in other words, they had only learned four-tenths as much as they should have. Said another way, they were learning .40 month's knowledge, on the average for every month they had been in school.

4. Determine how long children were in the special program.
   Example:
   September 15th to May 15th = 8 mos.
5. Determine the average gain/pupil during the special program.
   Example:

Cindy — Post-test achievement test score	2.8
Blanca — Post-test achievement test score	4.8
Iris — Post-test achievement test score	5.2
Jo Ann — Post-test achievement test score	4.5
Dwight — Post-test achievement test score	2.3
Total years on achievement test (post-test)	19.6
Total years on achievement test (pre-test)	11.0
Total years gained during the special program (Difference between post-test and pre-test)	8.6
Number of students	5

$\frac{8.6}{5} = 1.72$ yrs./student

   The average amount gain/pupil during the special program was 1.72 yrs./student.
6. Determine the ratio-of-learning during the special program. The ratio-of-learning during the special program is found by dividing the amount gained during the program by the number of years (or months) the students were in the program.

   Example:

Number of years gained during the program	1.72
Years in the program	.8

$\frac{1.72}{.8} = 2.15$

   The ratio-of-learning during this special program was 2.15.
7. Compare students' ratio-of-learning before entering the special program with their ratio-of-learning during the special program. It was .40, or they had been gaining .40 month's achievement for every month they were in school. While they were enrolled in this special program, their ratio-of-learning was 2.15, or they gained 2.15 month's achievement for every month they were in the special program.

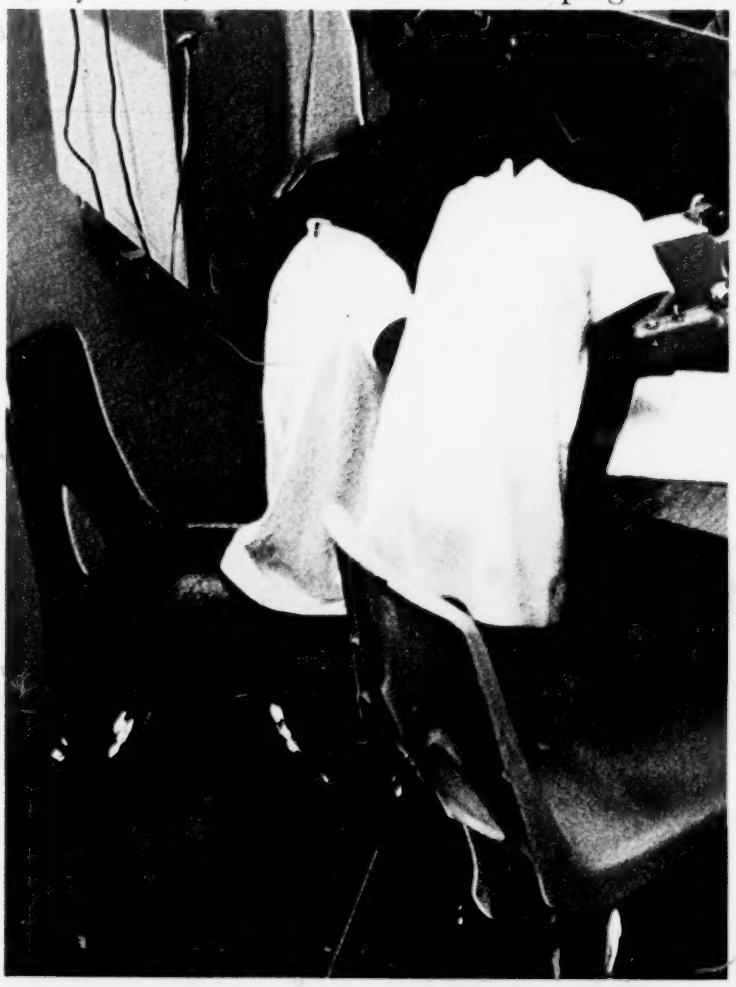
As one can see, students were learning 5.4 times as rapidly as they had been (2:15 ÷ 4 = 5.4), or simply stated, they were now learning at a rate of more than two times that of the average student. There would certainly be no doubt that this program was effective. Any ratio-of-learning, in this case, that was greater than .4 (the students' ratio-of-learning prior to the special program) would have indicated an improvement in this group's rate of learning.

V. Tables and Discussion of Tables

Tables I thru III indicate the number of years that children have been in school at each grade level in each of the schools where the skill centers were located. As Table I indicates, children in grade two at Brockington Elementary School had been in school for an average of 1.1 years as of 10/1/71. This means that none of the children had failed grade one, which was a policy new to the district. On the other hand, children in grade three would normally have been in school for 2.1 years as of 10/1/71. Since their average years in school was 2.17, it is evident that a few had failed either grade one or grade two. Grades four and five had also had a few children who had failed one or more years as is evidenced by the figures in Table I. It can also be noted

in Table II that the same type of policy was not in effect at St. David's Academy where all grades with the exception of grades six and seven had some children who had failed. For example, in grade three children had been in school for an average of 2.54 years, whereas, with no failures they would have been in school for 2.1 years. No students were repeating grade one. As Table III indicates, the failure rate for grade six at Pine Middle School was rather high since children had been in school an average of 5.34 years as compared with a no-failure rate of 5.10 years.

Tables IV, V, and VI give the pre- and post-test results of the C.R.S. Basic Sight Word Test at Brockington Elementary School and St. David's Academy and the post-test results at Pine Middle School. Since pre-testing procedures were not adhered to at Pine Middle School, the pre-test results are not reported. It is interesting to note in Table I that children in grade two at Brockington Elementary School knew a larger percentage of the basic sight words (56.51), with one more month to go in the school year, than third graders knew when they took the pre-test in October. In fact, they knew 12.33 percent more which would be equivalent to approximately thirty-three words. A comparison of the median number of words for the same children indicates that the near end-of-year second graders knew 167 words vs. 99 words for beginning third graders for a median difference of sixty-eight words. This same pattern exists at every grade level except grade four where the median number of words known by near end-of-year fourth graders is exactly equal to fifth graders tested in October. Table V indicates that students at near end-of-year in grade one did considerably better, with one month left in the program than second graders tested in October.



Their post-test percentage known was 34.02 vs. 13.65 for the second graders, and their post-test median was 84.5 vs. 23.0 for second graders. Again the average percent known as well as the median number known in every grade, with one month left in the program, exceeds the average percent known as well as the median number known in the next higher level when that next higher level grade was tested in October. It should also be noted that one half or more of all children in grades six and seven now know every basic sight word. Children who are at the end of grade three knew a median number of 259.5 which is only 7.5 from perfect. Table VI indicates that the average number of words known by children is 254.15 and that again over half of the children know all 267 of the basic sight words.

Tables VII and VIII show the pre- and post-test results and ratio-of-learning for children in grades two and three at Brockington Elementary School and St. David's Academy. As Table VII indicates, children's ratio-of-learning in grade two at Brockington Elementary School improved from .27 and .36 in vocabulary and comprehension respectively to .36 and .57 in vocabulary and comprehension respectively. Grade three made considerably greater gains. Their ratio-of-learning had been .28 and .32 in vocabulary and comprehension respectively, but during the program their ratio-of-learning changed to 1.14 in both vocabulary and comprehension. In other words, their rate of learning in vocabulary improved at 4.07 (1.14 ÷ 32) times their previous rate.

Table VIII indicates a similar pattern of improvement. Second graders ratio-of-learning improved from .23 in both vocabulary and comprehension to .43 and .71 in vocabulary and comprehension respectively. Third graders improved from a ratio-of-learning of .35 and .31 in vocabulary and comprehension respectively to a ratio-of-learning of 1.14 and 1.43 in vocabulary and comprehension respectively. Third graders rate of learning was improved 3.25 times over their previous rate (1.14 ÷ .35) in vocabulary and 4.61 times over their previous rate (1.43 ÷ .31) in comprehension.

Tables IX, X, and XI show the pre- and post-test results and ratio-of-learning for grades four and five at Brockington Elementary School, grades four thru seven at St. David's Academy, and grade six at Pine Middle School. In nearly every case, pupils learned at a rate of approximately two to three times, during the program, of what they did prior to the beginning of the program. The only exceptions to this was at St. David's Academy where students' ratio-of-learning dropped from .78 to .66 in comprehension at the sixth grade level and from .79 to .54 in vocabulary at the seventh grade level. It should, however, be noted that there were only six students at the sixth grade level and seven at the seventh grade level, therefore, it would easily be possible for large fluctuations in one or two students' performance to influence the overall results of the group. As shown in Table XI, students at Pine Middle School progressed at approximately the same rate in vocabulary during the program (.61), as they did prior to the program. However, in the area of comprehension they gained considerably, progressing from a ratio-of-earning of .65 previous to the program to a ratio-of-learning of .91 during the program.

Table XII indicates the percent of students at St. David's Academy, at fifth grade level, and a sample from Brockington Elementary School at fifth grade level who were reading silently and orally at fifth grade level. Since the Darlington Area School District has a very large percentage of children who would be considered culturally deprived, one could not expect them to be reading at grade level in terms of national norms. As Table XII shows, however, 43.75 percent of the children were able to read a fifth grade passage at their instructional level when reading silently, but only 12.50 percent were able to read at their instructional level when reading orally.

NUMBER OF YEARS CHILDREN HAVE BEEN IN SCHOOL AT EACH GRADE LEVEL

TABLE I—BROCKINGTON ELEMENTARY SCHOOL

Grade	Number of Students	Total Years in School	Average Number Years in School (10-1-71)	(5-1-72)
2	64 [4]	70.4	1.10 [2]	1.80
3	82	178.2	2.17 [3]	2.87
4	58	185.8	3.20	3.90
5	83	352.3	4.24	4.94

TABLE II—ST. DAVID'S ACADEMY

Grade	Number of Students	Total Years in School	Average Number Years in School (10-1-71)	(5-1-72)
1	22	0.1	0.1	0.8
2	21	27.1	1.29	1.99
3	18	45.8	2.54	3.24
4	21	67.1	3.20	3.90
5	14	61.4	4.39	5.09
6	6	30.6	5.10	5.80
7	7	42.7	6.10	6.80
Spec. Ed.	15	74.5	4.97	5.67

TABLE III—PINE MIDDLE SCHOOL

Grade	Number of Students	Total Years in School	Average Number Years in School (10-1-71)	(5-1-72)
6	151	806.1	5.34 [5]	6.04

PRE-TEST AND POST-TEST RESULTS OF BASIC SIGHT WORD TESTS [6]

TABLE IV—BROCKINGTON ELEMENTARY SCHOOL

Grade	No. Students (Pre)	(Post)	Ave. No. Known (Pre)	(Post)	Ave. Percent Known (Pre)	(Post)	Median No. Known (Pre)	(Post)	Gain or Loss (Average Percent)	(Median Number)
2	79	74	49.73	150.89	18.62	56.51	27.0	167.0	+37.89	+140.0
3	83	77	117.95	195.87	44.18	73.36	99.0	241.0	+29.18	+142.0
4	73	77	178.28	217.16	66.77	81.33	219.5	252.5	+14.56	+33.0
5	87	68	221.55	253.29	82.98	94.87	252.5	264.0	+11.89	+11.5

TABLE V—ST. DAVID'S ACADEMY

Grade	No. Students (Pre)	(Post)	Ave. No. Known (Pre)	(Post)	Ave. Percent Known (Pre)	(Post)	Median No. Known (Pre)	(Post)	Gain or Loss (Average Percent)	(Median Number)
1	0	18	[1]	90.83	[1]	34.02	[1]	84.5	[1]	[1]
2	20	21	36.45	133.33	13.65	49.94	23.0	161.0	+36.29	+138.0
3	18	18	126.44	206.22	47.36	77.24	143.5	259.5	+29.88	+116.5
4	21	19	196.29	238.16	73.52	89.20	233.0	263.0	+15.68	+30.0
5	14	13	206.57	243.15	77.37	91.07	213.5	265.0	+13.70	+51.5
6	6	6	247.83	262.83	92.82	98.44	255.0	267.0	+5.62	+12.0
7	7	7	238.00	261.85	89.14	98.07	254.0	267.0	+8.93	+13.0
Sp. Ed.	15	13	67.20	111.69	25.16	41.83	17.0	80.0	+16.67	+63.0

1 First grade students were not given the pre-test.

2 Second graders would have been in school for one year if none of them had ever failed, etc.

3 Third graders would have been in school for two years if none of them had ever failed, etc. (Students' average time was computed on the basis of the last full year they had attended previous to the 1971-72 Academic Year, plus September of 1971, when most tests were given.)

4 The total number of students represents the number for which records were complete. For example, if there were eighty students in a class, but complete records for only seventy-six then only seventy-six are counted as being in that class in this table. (At Gr. 2 there were fourteen students with incomplete records.)

5 Sixth graders would have been in school for five years if none of them had ever failed.

6 C.R.S. Basic Sight Word Test (267 words).

POST-TEST RESULTS OF BASIC SIGHT WORD TESTS

TABLE VI—PINE MIDDLE SCHOOL

Grade	No. Students	Average No. Known	Percent Known	Median No. Known
6	180	254.15	95.19	267

The testing procedure was not adhered to in the pre-testing, therefore, only the post-test results are reported here.

PRE-TEST AND POST-TEST RESULTS OF GATES-MacGINITIE READING TESTS AND RATIO-OF-LEARNING PRE-PROJECT PROGRAM AND DURING PROJECT PROGRAM

TABLE VII—BROCKINGTON ELEMENTARY SCHOOL

Grade	Form (Pre)	Form (Post)	No. of Students (Pre)	No. of Students (Post)	Average No. Years in School (Pre)	Average No. Years in School (Post)	Grade Level Vocabulary (Pre)	Grade Level Vocabulary (Post)	Ratio of Learning Vocabulary (Pre)	Ratio of Learning Vocabulary (During)	Grade Level Comprehension (Pre)	Grade Level Comprehension (Post)	Ratio of Learning Comprehension (Pre)	Ratio of Learning Comprehension (During)
2	B-2	B-1	37	36	. . .	. . .	1.3	1.6	. .	. .	1.3	1.9	. .	. .
2	B-1	B-2	38	38	. . .	. . .	1.3	1.7	. .	. .	1.4	1.8	. .	. .
2	Combined		75	74	1.1	1.80	1.3	1.7	.27 [2]	.57 [2]	1.4	1.8	.36	.57
3	C-2	C-1	41	36	. . .	. . .	1.6	2.4	. .	. .	1.7	2.4	. .	. .
3	C-1	C-2	41	45	. . .	. . .	1.6	2.4	. .	. .	1.6	2.5	. .	. .
3	Combined		82	81	2.17	2.87	1.6 [1]	2.4	.28	1.14	1.7	2.5	.32	1.14

TABLE VIII—ST. DAVID'S ACADEMY

Grade	Form (Pre)	Form (Post)	No. of Students (Pre)	No. of Students (Post)	Average No. Years in School (Pre)	Average No. Years in School (Post)	Grade Level Vocabulary (Pre)	Grade Level Vocabulary (Post)	Ratio of Learning Vocabulary (Pre)	Ratio of Learning Vocabulary (During)	Grade Level Comprehension (Pre)	Grade Level Comprehension (Post)	Ratio of Learning Comprehension (Pre)	Ratio of Learning Comprehension (During)
2	B-2	B-1	11	11	. . .	. . .	1.3	1.6	. .	. .	1.3	1.8	. .	. .
2	B-1	B-2	10	10	. . .	. . .	1.3	1.6	. .	. .	1.4	1.9	. .	. .
2	Combined		21	21	1.29	1.99	1.3	1.6	.23	.43	1.3	1.8	.23	.71
3	C-2	C-1	7	6	. . .	. . .	1.5	2.0	. .	. .	1.6	2.2	. .	. .
3	C-1	C-2	11	12	. . .	. . .	2.3	3.1	. .	. .	1.9	3.1	. .	. .
3	Combined		18	18	2.54	3.24	1.9	2.7	.35	1.14	1.8	2.8	.31	1.43

PRE-TEST AND POST-TEST RESULTS OF IOWA TESTS OF BASIC SKILLS AND RATIO-OF-LEARNING PRE-PROJECT PROGRAM AND DURING PROJECT PROGRAM

TABLE IX—BROCKINGTON ELEMENTARY SCHOOL

Grade	Form (Pre)	Form (Post)	No. of Students (Pre)	No. of Students (Post)	Average No. Years in School (Pre)	Average No. Years in School (Post)	Grade Level Vocabulary (Pre)	Grade Level Vocabulary (Post)	Ratio of Learning Vocabulary (Pre)	Ratio of Learning Vocabulary (During)	Grade Level Comprehension (Pre)	Grade Level Comprehension (Post)	Ratio of Learning Comprehension (Pre)	Ratio of Learning Comprehension (During)
4	3	4	35	37	. . .	. . .	2.22	3.59	. .	. . .	2.68	3.64	. .	. . .
4	4	3	34	32	. . .	. . .	2.52	3.84	. .	. . .	2.71	4.06	. .	. . .
4	Combined		69	69	3.20 [3]	3.90	2.36	3.71	.43	1.93	2.69	3.83	.53	1.63
5	3	4	43	37	. . .	. . .	3.29	4.42	. .	. . .	3.40	4.47	. .	. . .
5	4	3	44	40	. . .	. . .	3.74	4.47	. .	. . .	3.94	4.69	. .	. . .
5	Combined		87	77	4.24	4.74	3.52	4.45	.59	1.33	3.67	4.58	.63	1.30

1 To get this score the total number of years of achievement of all students at any one grade level was divided by the number of students at that grade level.

2 Ratio-of-learning is available for combined groups only since individual groups were not identified when average years at any one grade was computed.

3 Fourth graders would have been in school for three years if none of them had failed, etc.

TABLE X—ST. DAVID'S ACADEMY

Grade	Form (Pre)	Form (Post)	No. of Students (Pre)	No. of Students (Post)	Average No. Years in School (Pre)	Average No. Years in School (Post)	Grade Level Vocabulary (Pre)	Grade Level Vocabulary (Post)	Ratio of Learning Vocabulary (Pre)	Ratio of Learning Vocabulary (During)	Grade Level Comprehension (Pre)	Grade Level Comprehension (Post)	Ratio of Learning Comprehension (Pre)	Ratio of Learning Comprehension (During)
4	3	4	10	10	. . .	. . .	2.93	4.22	. .	. . .	3.17	4.33	. .	. . .
4	4	3	11	9	. . .	. . .	3.43	3.84	. .	. . .	3.36	4.02	. .	. . .
4	Combined		21	19	3.20	3.90	3.19	4.04	.68	1.21	3.27	4.18	.71	1.30
5	3	4	7	7	. . .	. . .	3.21	4.51	. .	. . .	3.73	4.84	. .	. . .
5	4	3	7	6	. . .	. . .	3.97	4.25	. .	. . .	3.74	4.43	. .	. . .
5	Combined		14	13	4.39	5.09	3.59	4.39	.59	1.14	3.74	4.65	.62	1.30
6	3	4	3	3	. . .	. . .	4.00	5.10	. .	. . .	4.57	4.73	. .	. . .
6	4	3	3	3	. . .	. . .	5.77	6.93	. .	. . .	5.37	6.13	. .	. . .
6	Combined		6	6	5.10	5.80	4.89	6.02	.76	1.61	4.97	5.43	.78	.66
7	3	4	3	3	. . .	. . .	5.33	7.16	. .	. . .	5.63	6.23	. .	. . .
7	4	3	4	4	. . .	. . .	6.15	5.45	. .	. . .	5.38	6.48	. .	. . .
7	Combined		7	7	6.10	6.80	5.80	6.18	.79	.54	5.49	6.37	.74	1.26

TABLE XI—PINE MIDDLE SCHOOL

Grade	Form (Pre)	Form (Post)	No. of Students (Pre)	No. of Students (Post)	Average No. Years in School (Pre)	Average No. Years in School (Post)	Grade Level Vocabulary (Pre)	Grade Level Vocabulary (Post)	Ratio of Learning Vocabulary (Pre)	Ratio of Learning Vocabulary (During)	Grade Level Comprehension (Pre)	Grade Level Comprehension (Post)	Ratio of Learning Comprehension (Pre)	Ratio of Learning Comprehension (During)
6	3	4	57	56	. . .	. . .	4.49	5.19	. .	. . .	4.62	5.29	. .	. . .
6	4	3	116	109	. . .	. . .	4.29	4.58	. .	. . .	4.39	5.02	. .	. . .
6	Combined		173	165	5.34	6.04	4.36	4.79	.63	.61	4.47	5.11	.65	.91

PERCENT OF STUDENTS IN THE FIFTH GRADE WHO ARE READING FIFTH GRADE LEVEL MATERIAL AT THEIR FREE, INSTRUCTIONAL AND FRUSTRATION READING LEVELS

TABLE XII

School	No. of Students	Percent at Free Reading Level (Silent)	Percent at Free Reading Level (Oral)	Percent at Instructional Level (Silent)	Percent at Instructional Level (Oral)	Percent at Frustration Level (Silent)	Percent at Frustration Level (Oral)	Percent Reading at Instructional Level or Above (Silent)	Percent Reading at Instructional Level or Above (Oral)
Brockington Elem. School	35	.00	.00	42.86	11.43	57.14	88.57	42.86	11.43
St. David's Academy	13	.00	.00	46.15	15.38	53.85	84.62	46.15	15.38
Total	48	.00	.00	43.75	12.50	56.25	87.50	43.75	12.50

VI. Summary of the Effectiveness of the Program as Shown from Data Collected

The Skills Centers Program in the three Darlington Schools appears to have been highly successful as shown by all testing done during its first year of operation. Especially noteworthy is the fact that in the majority of the cases children appear to be learning at a rate of considerably faster than they did prior to their participation in the program. In fact, in considerably more than one-half of the grades measured, children appear to be achieving at two to three times their previous rate.

Another facet of the program not shown by research data, but obvious to the researcher is the positive change in the attitude of both the skill center teachers as well as teachers who have come in contact with the consultants and skills center personnel. From the research results, as well as personal observation the researcher would be inclined to conclude that this is one of the most highly successful reading programs in the country.

RECOMMENDATIONS. Based on the study and evaluation of research findings and the experience of program operation during the 1971-72 school year, the following recommendations are made.

1. That Reading Skills Centers be established at other high priority schools as funding permits.
2. That existing and newly established Reading Skills Center programs give priority consideration and attention to work with the primary grades.
3. That student participation time in any new Centers be established on a formula of one period per day, approximately 50 - 55 minutes per period, five days per week and that schedules of existing Centers be altered to the extent possible to conform to this same formula.
4. That permanent Reading Skills Center personnel level be established at 1 Director and 2 Teacher Aides per Center.
5. That Center personnel and involved classroom teachers of schools where new Centers are to be established be pre-trained and receive continuing consultant assistance throughout the school year as per the plan during 1971-72, and that new and/or replacement personnel of schools with existing Centers receive same pre-training as others.
6. That all Centers receive continuing consultant assistance as needed throughout the 1972-73 school year.
7. That the research on effectiveness of the program be continued and expanded to include provisions for study of new students in the program as well as continuation study of students who have participated previously.
8. That the research be further expanded to include a measurement of change in teacher attitudes as a result of the Reading Skills Center program.
9. That attention be given to closer correlation between Reading Skills Center activity and follow-up activity in the regular classroom.

COMMENTS. The following statements are excerpts taken from broader comments submitted by Center staff personnel, classroom teachers, principals and others who were involved in the Reading Skills Center program.

"Students are assuming more responsibility for their own learning."

"The Reading Skills Center is a source of pride for this school."

"Many of the practices used in the Reading Skills Center are being adopted in other courses."

"Staff preparation for Reading Skills Center participation has had wholesome effects on other school personnel."

"I have learned a great deal in the excellent workshops by observing, asking questions, making mistakes, and most of all, by doing."

"One very noticeable help the Reading Center has been to the students is in teaching them to follow directions and to keep their records."

"The students have shown improvement in their free reading habits. They have become more selective in choosing library books and have developed the ability to independently look for new materials they find interesting. They are doing less re-reading of old favorites which were often far below their reading level."

"Would you believe me when I say the children had rather work than color?"

"The pleasure of seeing children learn to read and enjoying it at the same time is a rare treat for any educator."

"The cooperation and work of the classroom teacher has contributed a great deal to the success of the program."

"The programs, materials and equipment make up a very reliable system in reading which provides pupils the opportunity to advance at his own rate, as far as his ability permits."

"I believe that teachers feel more confident of their efforts and approaches."

"The Centers are alive and warm."